High capacity and superior performance for demanding server environments

IBM Ultrastar 36LZX hard disk drives

Highlights

Rotational speeds of 10,000 RPM and average seek times as low as 4.9 ms help boost overall performance.

Capacities including 36 GB, 18 GB, and 9 GB provide outstanding configuration flexibility.

2 Gbits/sec fibre channel speed provide the fastest interface technology.

Active damping, load/unload technology, and glass substrate disks enhance reliability and robustness to prolong drive lifetime.

Buffer sizes up to 4 MB and automatic buffer transfer provide outstanding performance—especially for large data transfers and other sequential operations.

Quiet Seek reduces noise resulting in outstanding acoustic environmental performance.

Proven drive technology
As the fourth generation of the award-winning IBM Ultrastar* 10,000 RPM disk drive family, the IBM Ultrastar 36LZX drive offers proven quality and the latest technological advances, such as more powerful actuator motors, active damping, and leading-edge interfaces.

To achieve maximum I/O performance, these drives combine extremely fast seek times, extra large multisegmented buffers, a sophisticated new command queuing system, hardware automation, and industry-leading sustained data rates. Enhanced suspension and active damping improve write accuracy and reduce data access time.

IBM Ultrastar 10,000 RPM drives employ giant magnetoresistive (GMR) head technology to increase areal density (up to 7.0 Gbits/sq. in.) and performance. In addition, highly efficient No-ID* sector formatting enables more data to be stored per disk.

Reliability leadership
To help ensure the maximum data protection possible, IBM Ultrastar drives include IBM-exclusive reporting tools, such as Predictive Failure Analysis* (to alert users about potential drive problems) and Drive-TIP* (to monitor drive temperatures and avoid malfunctions).

Reliability is further enhanced through load/unload technology, glass substrate disks, and active damping, which stabilizes head movement even under extreme conditions. Together, these technologies provide a more robust solution at high RPMs. In addition, IBM Ultrastar drives have fewer components than other drives, a factor that reduces the probability of component failure.

Outstanding environmentals
An efficient electronic design enables low power requirements for 10,000 RPM drives. Enhanced power standby modes are triggered by read/write inactivity to minimize power use and are available only with load/unload technology, an exclusive on IBM Ultrastar SCSI and serial drives.

Support for advanced applications and interfaces
IBM Ultrastar drives provide the high data throughput required by storage management, Internet, multimedia, and other data-intensive applications. These drives offer Ultra160 SCSI and fibre channel interfaces.

IBM Ultrastar 36LZX 3.5-inches 36.7GB high-performance disk drive

IBM Ultrastar 36LZX 3.5-inch 36.7, 18.3, and 9.1 GB disk drives

Configuration		***DDYS***	***DDYF***
	Interface	Ultra160 SCSI[1]	FC-AL
	Formatted capacity (512 bytes)	36.7/18.3/9.1	
	Sector size (in bytes)	512-528 (variable, 2-byte inc.)	
	Recording zones	11	
	Data heads	12/6/3	
	Disks	6/3/2	
	Areal density (maximum)	7040 Mbits/sq. in.	
	Recording density (maximum)	352,000 BPI	
	Track density	20,000 TPI	
Performance	Data buffer	4 MB[2]	
	Rotational speed	10,000 RPM	
	Latency (average)	2.99 ms	
	Media transfer rate	280-452 Mbits/sec	
	Interface transfer rate	160 MB/sec	200/400 MB/sec
	Sustained data rate	21.7-36.1 MB/sec	
	Seek time Average Track to track Full track	 4.9 ms 0.5 ms 10.5 ms	
Reliability	Error rate (nonrecoverable)	1 in 10E14 bits read	
	Start/stop cycles	50,000 cycles	
Power (typical read)			
	Requirement	+5 VDC (+-5%), +12 VDC (+-5%)	
	Dissipation (typical) Startup (maximum peak) Idle	 0.94 A (5V), 2.5 A (12 V) 12.9, 9.7, 8.5 W	 0 A (5V), 2.5 A (12 V) 13.6, 10.5, 9.94W
	Power consumption efficiency index	0.0004 W/MB, 0.0005 W/MB, 0.0009 W/MB	0.0004 W/MB, 0.0006 W/MB, 0.0011 W/MB
Dimensions	Height	25.4 mm	
	Width	101.6 mm	
	Depth	146.0 mm	
	Weight (maximum)	690 g	
Environmental characteristics		***Operating***	***Nonoperating***
	Ambient temperature	5° to 50° C	-40° to 65° C
	Relative humidity (noncondensing)	8% to 90%	5% to 95%
	Maximum wet bulb (noncondensing)	29.4° C	35.0° C
	Shock (half sine wave) for 36LZX	10 G (11 ms) / 45 G (2 ms)	75 G (11 ms) / 225 G (2 ms)
	Random vibration (RMS)	0.67 G (horiz.) / 0.56 G (vert.)	1.04 G

[1] Ultra160 SCSI is an implementation of the Ultra3 SCSI standard and includes three of the five features.
[2] Upper 288 KB used for firmware.

For more information

Internet and e-mail:

- www.ibm.com/harddrive
- drive@us.ibm.com

IBM TECHFAX document server:

- 408-256-5418 (requires touch-tone phone)
- International callers must call from a fax machine

IBM hard disk drive product information:

- 1 888 IBM-5214 (United States)
- 507-253-4110 (outside of the United States)

Product description data represents design objectives and is provided for comparative purposes; actual results may vary depending on a variety of factors. Product claims are true as of the date of the first printing. This product data does not constitute a warranty. Questions regarding IBM warranty terms or the methodology used to derive this data should be referred to an IBM representative. Data subject to change without notice.

© Copyright IBM Corporation 2000
Produced in the United States
3-00
All Rights Reserved

* IBM, Drive-TIP, No-ID, Predictive Failure Analysis, and Ultrastar are registered trademarks or trademarks of International Business Machines Corporation. Other product names are trademarks or registered trademarks of their respective companies.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make them available in all countries in which IBM operates.

IBM®

www.ibm.com/harddrive

IBM Storage Systems Division
5600 Cottle Road
San Jose, CA 95193

TECHFAX # 7111

G225-6846-02